WHAT IS CLAIMED IS:

Sub B²

1. A time slot interchanger (TSI) for a telecommunications node, comprising:

an exchange memory including a plurality of exchange memory slots, each exchange memory slot sized to store a traffic channel and including a plurality of discretely addressable fields sized to store a sub-channel; and

a controller operable in response to predefined switching instructions to write a sub-channel received in a first time slot to a first field in a memory slot and to write a sub-channel received in a second time slot to a second field in the memory slot.

2. The TSI of Claim 1, the controller further operable to read a first sub-channel from a memory slot to an egress time slot and a second sub-channel in the memory slot to a disparate egress time slot.

3. The TSI of Claim 1, the controller further operable to write a first sub-channel in a memory slot to a first disparate memory slot and to write a second sub-channel in the memory slot to a second disparate memory slot.

4. The TSI of Claim 1, the controller further operable to write a sub-channel in a field of a memory slot to a disparate field in a memory slot.

5. The TSI of Claim 1, the controller further operable to write a sub-channel in a field of a memory slot to a disparate field in an egress time slot.

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6.   The TSI of Claim 1, wherein the traffic channel is a DS-0 and the sub-channel is a ¼ DS-0.

7.   The TSI of Claim 1, further comprising:

the exchange memory comprising an exchange random access memory (RAM) and an exchange register bank;
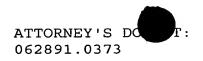
the exchange RAM including a plurality of exchange RAM slots each sized to store the traffic channel and including a plurality of discretely addressable fields sized to store a sub-channel; and

.   the exchange register bank including a plurality of exchange registers each sized to store the traffic channel and including a plurality of discretely addressable fields sized to store a sub-channel.

8.   The TSI of Claim 7, the controller operable to write a sub-channel in an exchange RAM slot to a first field in an exchange register and to write a sub-channel in a disparate exchange RAM slot to a second field in the exchange register.

9.   The TSI of Claim 7, the controller further operable to write a first sub-channel in an exchange RAM slot to a first exchange register and to write a second sub-channel in the exchange RAM slot to a second exchange register.

10. The TSI of Claim 7, the controller further operable to write a sub-channel in a field of an exchange RAM slot to a disparate field in an exchange register.

11.   The TSI of Claim 7, wherein the exchange register is internal to the controller.

12. A method for time division multiplex (TDM) switching of traffic in a telecommunications node, comprising:

receiving a traffic stream including a plurality of traffic channels having discrete sub-channels;

writing each traffic channel to a separate memory slot in an exchange memory;

writing a sub-channel in a first memory slot to a first field in a second memory slot;

writing a sub-channel in a third memory slot to a second field in the second memory slot; and

reading a combined traffic channel including the sub-channels from the second memory slot to an egress time slot.

13. The method of Claim 12, further comprising:

writing a sub-channel in a fourth memory slot to a first disparate memory slot; and

writing a second sub-channel in the fourth memory slot to a second disparate memory slot.

14. The method of Claim 12, further comprising writing a sub-channel in a field of a fourth memory slot to a disparate field of one of the memory slots in the exchange memory.

15. The method of Claim 12, wherein the traffic channel is a DS-0 and the sub-channel is a ¼ DS-0.

16.   The method of Claim 12, further comprising:

writing each traffic channel to a separate random access memory (RAM) slot in an exchange RAM;

writing a sub-channel in a first RAM slot to a

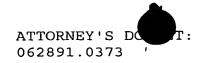5   first field in an exchange register of an exchange register bank; and

writing a sub-channel in a second RAM slot to a second field in the exchange register.

10   17.   The method of Claim 16, wherein the exchange register is internal to a controller writing the sub-channels from the RAM slot to the exchange register.

18.   A switch card for a telecommunications node, comprising:

a time slot interchanger (TSI);

a switch interface operable to receive traffic

5   from a plurality of line cards for the TSI and to transmit traffic from the TSI to the line cards;

an instruction register operable to provide predefined switching instructions to the TSI for routing traffic to and from the line cards;

10   an exchange register bank;

an exchange random access memory (RAM); and

the TSI responsive to the predefined switching instructions from the instruction register to write traffic channels received from the switch interface into the

15   exchange RAM, to write a sub-channel in a first slot of exchange RAM to a first field in an exchange register of the exchange register bank and to write a sub-channel in a second slot of exchange RAM to a second field in the exchange register.

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19.   The switch card of Claim 18, the TSI further operable to write first and second sub-channels stored in a slot of the exchange RAM to disparate exchange registers.

25   20.   The switch card of Claim 18, wherein the exchange register is internal to the TSI.

        21.   A method for processing traffic in a time slot
interchanger (TSI) comprising:
        receiving a traffic stream including a plurality
of traffic channels;
5   writing each traffic channel to a memory slot in
an exchange memory;
        reading a traffic channel stored in a memory
slot;
        modifying data to generate a modified traffic
10 channel; and
        writing the modified traffic channel to a memory
slot.

        22.   The method of Claim 21, further comprising
15 modifying the data based on logic operations provided with
an instruction word for the TSI.

        23.   The method of Claim 21, further comprising
writing the modified traffic channel to a disparate traffic
20 channel.

        24.   The method of Claim 21, further comprising:
        determining a value of the data in the traffic
channel; and
25   performing a specified action when the data has
a specified value.

        25.   The method of Claim 21, further comprising
merging data of the traffic channel with data from a
30 disparate traffic channel to form a conference traffic
channel.